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Lethal weaponry and tactics used by enemy forces in Operations Enduring Freedom and Iraqi Freedom have resulted in complex multisystem injury patterns among US allied military personnel engaged in combat operations. Military medical personnel deployed in support of these campaigns have had to maintain a high degree of clinical skill to effectively render care to wounded combatants, a necessity that has been challenged by a lack of training opportunities within the military health care system. Medical components across the military have formed partnerships with civilian institutions to form programs such as the Saint Louis Center for Sustainment of Trauma and Readiness Skills, in which medical personnel from active and reserve components are able to obtain and build skills needed to respond to contingencies that may arise both abroad and within the homeland.

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Saint Louis Center for Sustainment of Trauma and Readiness Skills: A Collaborative Air Force–Civilian Trauma Skills Training Program

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Lethal weaponry and tactics used by enemy forces in Operations Enduring Freedom and Iraqi Freedom have resulted in complex multisystem injury patterns among US allied military personnel engaged in combat operations. Military medical personnel deployed in support of these campaigns have had to maintain a high degree of clinical skill to effectively render care to wounded combatants, a necessity that has been challenged by a lack of training opportunities within the military health care system. Medical components across the military have formed partnerships with civilian institutions to form programs such as the Saint Louis Center for Sustainment of Trauma and Readiness Skills, in which medical personnel from active and reserve components are able to obtain and build skills needed to respond to contingencies that may arise both abroad and within the homeland.

Recent conflicts in Afghanistan and Iraq have yielded both significant innovations in trauma care and several challenges. Some notable innovations included the use of whole blood transfusions and the development of numerous hemostatic agents.[1] One of the most significant challenges has been the increase in explosive injury mechanisms compared with prior conflicts.[2] Such injuries are the result of lethal weaponry and tactics used by enemy forces and have necessitated a high degree of clinical skill among medical personnel deployed to provide care to combat-injured patients. Civilian trauma training programs have been incorporated in military training expectations. Although these courses provide a foundational level of knowledge and skill, they are limited by the number of hands-on clinical training opportunities they are able to offer. Furthermore, reductions in the inpatient capabilities of many military treatment facilities have presented a dearth of opportunities for personnel to build trauma-focused skills. Many medical components within the military have thus formed partnerships with civilian medical facilities in which personnel are able not only to build experience in trauma care but also to maintain skills required for their specialty. This article will highlight the Saint Louis Center for Sustainment of Trauma and Readiness Skills (C-STARS), one of three such programs that were established by the Air Force in collaboration with civilian trauma hospitals around the country. The invaluable support of the civilian facilities involved in this collaboration has enabled the Air Force to provide robust, cutting-edge training opportunities for its active and reserve personnel.

Origination of C-STARS Saint Louis

The foundation for this program began in 1998 with the establishment of a medical skills training laboratory at DePaul Hospital in Bridgeton, Missouri, by Colonel (Dr) Michael Hayek (now deceased), who served as the Missouri Air National Guard (ANG) Surgeon at the time. Colonel Hayek presented the program to the Air Force Surgeon General in March 2000 and secured a commitment to obtain the necessary resources to grow the program. Four active-duty personnel were assigned in 2001, and the program was transferred to Saint Louis University Hospital (SLUH) in November 2002.[3]

Overview

C-STARS Saint Louis conducts 19 courses year-round, each of which is 14 days in length and includes classroom instruction, high-fidelity human patient simulation, low-fidelity skills laboratory stations, and rotations in various clinical settings. Each course can accommodate up to 22

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students, who primarily consist of physicians, physician assistants, advanced practice registered nurses, registered nurses, and medical technicians who are assigned to stateside ANG units or US Air Force medical facilities around the world. The program has a dual focus: to provide trauma-focused training and to fulfill sustainment training needs that students may not be able to accomplish at their assigned duty location.

The current cadre is composed of a mix of active-duty and full-time Missouri ANG providers, nurses, and medical technicians along with administrative staff. All of the nurses and providers are credentialed as full-time non-tenure track faculty at Saint Louis University and work alongside their civilian counterparts within their respective specialties at SLUH and the affiliated institutions. Each has undergone his or her respective facility's orientation, credentialing, and privileging processes and has been involved in the care of trauma patients while deployed in support of Operations Enduring Freedom and Iraqi Freedom.

The program is primarily based within SLUH and has affiliations with several other institutions in the Saint Louis metropolitan area. Most of the cadre are assigned to SLUH, where the C-STARS Director also functions as the chief of the trauma department. The nurse cadre at SLUH is assigned to the trauma and neurologic intensive care units (ICUs) and the emergency department, as are some of the technician cadre. Additional cadre members are assigned to the emergency department and ICU at Sisters of Saint Mary Cardinal Glennon Children's Medical Center and to Mercy Hospital St. Louis. C-STARS also is affiliated with the Saint Louis City Fire Department Emergency Medical Services (EMS). An Air Force Training Affiliation Agreement (TAA) is in place at all facilities that addresses medical malpractice coverage for military personnel, and it also allows each facility to capture Medicare reimbursement for patient care services rendered by the provider cadre assigned to it.

Program Components

The first 2 days of the course include lectures, rotations through various skills stations, and an initial simulation exercise. The lectures cover a variety of topics related to management of trauma patients in deployed settings. Some examples of topics covered include initial stabilization and treatment, management of mass casualty situations, and management of pediatric patients. Skills stations include operation of medical equipment such as a rapid fluid infuser and ventilator setup and operation. Students also participate in specialty-specific stations covering topics including intravenous therapy, central-line and chest tube insertion, and performance of the focused assessment of sonography for trauma examination.

The remainder of the program is composed of additional simulation scenarios and clinical rotations that vary depending on the students' specialties and enable them to provide direct patient care. The clinical rotations for the provider students are designed to build skill in the management of adult trauma patients and in the performance of invasive procedures such as chest tube and central venous catheter insertion. These individuals are assigned to the trauma service at SLUH under the guidance of the C-STARS provider cadre and perform 24-hour call shifts that involve rounding on trauma ICU patients and responding to trauma calls with the civilian members of the trauma team.

The clinical experiences for nurse and technician students are designed to build trauma-focused skills and provide them with opportunities to obtain currency in skills required for their individual specialty. Nurses rotate through the emergency department and neurologic, trauma, and pediatric ICUs at SLUH and the affiliated facilities. The medical technicians rotate through these same areas and also are assigned to shifts with the civilian EMS teams. When not under the guidance of the C-STARS cadre, students are paired with civilian nurse and EMS preceptors in accordance with the TAAs.

Simulation scenarios involve 1 to 4 computerized patients, each of which has undergone moulage application to mimic cases that have occurred in the deployed environment. Both low-fidelity task trainers and high-fidelity manikins are used for learning. Moulage can be applied to the manikins to mimic a range of injuries such as explosive blast wounds and traumatic brain injury. The low-fidelity task trainers are used to provide students the opportunity to practice patient stabilization skills; for example, a tension pneumothorax mimicked by the manikin would be addressed by demonstration of chest tube insertion on the task trainer. Each of the trainers can be reconfigured to enable multiple students to practice the same skills. These scenarios are designed to emphasize the importance of teamwork and communication in affecting the outcome of the patient and to prepare students for particular injury patterns they likely will encounter in deployed environments.

ANG Mission Support

C-STARS Saint Louis also provides support for specialized teams. ANG medical personnel assigned to a Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive (CBRNE) Enhanced Force Response Package (CERFP) may be called up in response to contingencies that arise within the United States. Ten of these teams were established in 2007,

with one assigned in each of the Federal Emergency Management Agency (FEMA) areas.[4] The overall mission of a CERFP is to provide immediate search and response capability to a state governor. Some of these capabilities include the rescue of persons with casualties, decontamination, and the performance of triage and initial stabilization and treatment of injured patients.[4]

Another group that receives support is the Department of Defense's Homeland Response Force (HRF). The HRF's mission is to focus on life-saving objectives during a CBRNE event; there is one HRF team in each FEMA area as well. Each team has 570 ANG personnel assigned to various capabilities such as medical, search and extraction, security, and command and control.[4]

Medical personnel assigned to these teams include physicians of various specialties, nurse practitioners, and certified registered nurse anesthetists, as well as nurses and medical technicians. Although many of them maintain specialty-specific skills in their civilian practices, many do not routinely care for adult and pediatric trauma patients. Thus they attend the C-STARS program because there may not be opportunities for them to obtain trauma skills within their units or their local communities.

Joint Educational Support

In addition to training military students, the C-STARS Saint Louis team routinely volunteers in a variety of educational and training opportunities for civilian staff at the affiliated institutions. For example, the provider cadre teaches advanced trauma courses sponsored by SLUH and supervises medical residents in their respective specialties. All of the nursing cadre are credentialed in civilian trauma nurse courses and teach them at various facilities around the metropolitan area. In addition, they assist their civilian counterparts in precepting newly hired staff in their assigned clinical areas. The technician cadre has conducted in-service training for civilian emergency nurses and residents on topics such as the use of intraosseous needles, tourniquet application, and use of a rapid fluid infuser. Cadre members have also assisted local hospitals in conducting numerous mass casualty and disaster training drills for their civilian employees. Furthermore, the C-STARS simulator operators have conducted numerous simulation exercises for SLUH emergency medicine residents and nurses, which have helped to enhance their teamwork and communication skills.

Until 2012, SLUH served as one of several training sites for the Air Force Nurse Corps' Critical Care and Emergency Nursing Fellowship. This was a year-long program during which active-duty nurses performed clinical rotations throughout the hospital's ICUs and emergency department. Many of the civilian nurses assigned to these areas provided critical support by volunteering to precept and evaluate the nurses during their rotations. On completion of the fellowship, the military nurses qualified for either the emergency and trauma nurse or critical care nurse military specialty identifier and were assigned to these billets at their next duty station.

Conclusion

In addition to the C-STARS program in Saint Louis, there are similar joint ventures across the nation. For example, additional C-STARS programs are located at R. Adams Cowley Shock Trauma Center in Baltimore, Maryland, and the University of Cincinnati Medical Center.[3] Air Force reservists from a medical unit in Massachusetts have spent their annual 2-week tours at a civilian hospital in Utah. During these tours, the military nurses and medical technicians shadow civilian physicians and nurses, participate in emergencies, and perform routine patient care skills.[5] Medics from the Texas Army National Guard also have performed similar training at a facility in Corpus Christie, Texas.[6] The agreement between the military and the hospital limits the care these medics can provide; however, their experiences have encompassed the majority of the skills they are trained to perform.[6] The civilian nurses, physicians, and staff at SLUH and the other facilities involved in these collaborative programs have played an invaluable role in ensuring that military medical personnel are able to render safe and effective care during times of war and peace.

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